REMARKS

Upon entry of this Amendment, claims 1-20 remain pending and under current examination. In the Office Action,[1] the Examiner took the following actions;

(a) objected to claim 4 for an informality;

(b) rejected claims 3, 4, 5, 14, and 19 under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement;

(c) objected to the drawings under 37 C.F.R. § 1.83(a);

(d) rejected claims 1-4, 6, 7, 9, 11-13, 15, 16, 18, and 20 under 35 U.S.C. § 102(e) as being anticipated by Ikeda et al. (U.S. Patent No. 6,403,985) ("Ikeda"); and

(e) rejected claims 5, 8, 10, 14, 17, and 19 under 35 U.S.C. § 103(a) as being unpatentable over Ikeda.

Applicants traverse the rejections for the following reasons.

Objection to Claim 4:

In response to the Examiner's objection to claim 4 for an informality, Applicants have amended claim 4, in part, to replace "CdT_2" with "CdI_2." Accordingly, Applicants request withdrawal of the objection.

Rejection of Claims 3, 4, 5, 14, and 19 under 35 U.S.C. § 112, 1st ¶:

The Examiner rejected these claims "as failing to comply with the enablement requirement" (Office Action, p. 2). The Examiner's basis for the rejection is that claim 1:

> discloses using metal halides with a hexagonal crystal structure. However, the dependent claims disclose, for example, HgI_2[,] a tetragonal crystal structure, InI[,] an orthorhombic crystal structure, InI_3[,] a monoclinic structure, and therefore does not enable the invention because [claim 1] requires the metal halide films to be laminated along the c-axis of the hexagonal structure. (See attached MatWeb references [...] and also see attached definitions of the Callister reference [...]). The claim requires lamination along the c-axis of the hexagonal structure, but the dependent

[1] The Office Action may contain statements characterizing the related art, case law, and claims. Regardless of whether any such statements are specifically identified herein, Applicants decline to automatically subscribe to any statements in the Office Action.

> claims cite crystals that have other crystal structures which inherently cannot be laminated in the claimed direction. Office Action, pp. 2-3.

In response, Applicants have amended claims 3, 4, 5, 14, and 19, to remove reference to materials that have crystal structures other than hexagonal. The independent and dependent claims are now consistent in their recitation of a hexagonal structure and lamination along a c-axis of a hexagonal structure. Accordingly, Applicants request withdrawal of the rejection.

Objection to the Drawings:

The Examiner objected to Fig. 5 because "the definition of the direction of the c-axis within the laminate structures must be shown or the feature(s) cancelled from the claim(s)" (Office Action, p. 3). In addition, the Examiner "respectfully requests that the inventor provide a figure [...] of a hexagonal crystal structure with the c-axis and a-axis defined, as it is claimed." Id.

In response, Applicants have submitted two new drawing sheets, including new Figs. 9A, 9B, 10A, and 10B, and have amended the description in the specification beginning on page 11, beginning after line 4, and at p. 12, line 12, to refer to the new drawings. The added description states:

> For example, Fig. 9A illustrates a general hexagonal structure, in the c-plane, for BiI_3. Fig. 9B illustrates a different view of the BiI_3 structure shown in Fig. 9A, this time showing the direction of the c-axis. Similarly, Fig. 10A illustrates a general hexagonal structure, in the c-plane, for PbI_2. Fig. 10B illustrates a different view of the PbI_2 structure shown in Fig. 10A, this time showing the direction of the c-axis.

These figures, and their corresponding description, describe known the known hexagonal structures of BiI_3 and PbI_2, which have already been disclosed elsewhere in the specification. No new matter has been added. In addition, these drawings are submitted at the Examiner's request, and clearly show (e.g., in Figs. 9B and 10B) the c-axis direction, with the a-axis direction being

orthogonal to the c-axis. Accordingly, Applicants request withdrawal of the objection to the drawings.

Applicants request that these new drawing sheets be made of official record. If the drawings are not in full compliance with the pertinent statutes and regulations, please advise the undersigned. Formal drawings of Figs. 9A, 9B, 10A, and 10B will be filed upon their acceptance and allowance of the pending claims.

Rejection of Claims 1-4, 6, 7, 9, 11-13, 15, 16, 18, and 20 under 35 U.S.C. § 102(e):

Applicants request reconsideration and withdrawal of the rejection of claims 1-4, 6, 7, 9, 11-13, 15, 16, 18, and 20 under 35 U.S.C. § 102(e) as being anticipated by Ikeda. Applicants respectfully disagree with the Examiner's arguments and conclusions.

In order to properly establish that Ikeda anticipates Applicants' claimed invention under 35 U.S.C. § 102, each and every element of each of the claims in issue must be found, either expressly described or under principles of inherency, in that single reference. Furthermore, "[t]he identical invention must be shown in as complete detail as is contained in the ... claim." *See* M.P.E.P. § 2131, quoting *Richardson v. Suzuki Motor Co.*, 868 F.2d 1126, 1236, 9 U.S.P.Q.2d 1913, 1920 (Fed. Cir. 1989).

Ikeda does not disclose each and every element of Applicants' claimed invention, despite the Examiner's allegations.

First, Applicants' amended independent claims 1 and 16 disclose[2] a flat panel X-ray detector, which recite, in part, that an

> X-ray-charge conversion film has *a laminate structure including a plurality of metal halide films laminated along a direction of a c-axis of a hexagonal crystal structure* and differing in band gap from one another, halogen

[2] The amendments to claims 1 and 16 find support in the specification at, for example, p. 12, lines 15-17.

> atoms contained in said plurality of metal halide films are of the same kind among them, and *said plurality of metal halide films have about the same lattice constant;*
>
> and that an
>
> X-ray-charge conversion film has *a laminate structure comprising a plurality of metal halide films laminated along a direction of a c-axis of a hexagonal crystal structure* and differing in band gap from one another, the halogen atoms of the metal halide films are of the same kind with one another, and *said plurality of metal halide films have about the same lattice constant.* Amended claims 1 and 16, emphasis added.

Ikeda does not disclose anything according to the claimed flat panel X-ray detector quoted above. Rather, Ikeda discloses a flat panel X-ray detector characterized by using a two-layer X-ray-charge conversion film with different resistivity in each layer, to enable detection of an image even with weak X-ray irradiation. Ikeda discloses various materials for forming the two-layer X-ray-charge conversion film. However, the materials disclosed by Ikeda are *amorphous*, and are thus not "laminated along a direction of a c-axis of a hexagonal crystal structure," and therefore cannot "have about the same lattice constant," according to independent claims 1 and 16. For example, Ikeda mentions HgI_2 at col. 10, line 3, but as the Examiner has pointed out, this structure is *tetragonal*, and not hexagonal. Moreover, Ikeda mentions HgI_2 and PbI_2 at col. 12, line 26, but these films are *amorphous*.

Therefore, *prima facie* case of anticipation has not been established because Ikeda does not disclose each and every element of independent claim 1 or 16.

Second, the Examiner alleged that Ikeda "discloses that the laminated materials are hexagonal structured elements such as PbI_2 (column 12, lines 24-26), but does not explicitly state that they are laminated in the direction of the c-axis. However, it is inherent that the layers of a

hexagonal structure must be laminated within the c-axis because there are no other planes in which the layering could occur" (Office Action, p. 5).

In response, Applicants respectfully submit that the Examiner's position is technically inaccurate. Specifically, it is not correct that "the layers of a hexagonal structure must be laminated within the c-axis because there are no other planes in which the layering could occur." Id. Moreover, the Examiner has not properly established inherency.

If the Examiner is relying on inherency, she must provide extrinsic evidence to establish inherency. "The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic." M.P.E.P. § 2112(IV), internal citations omitted. Thus,

> [t]o establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.' Id.

In this case, the Examiner has not provided extrinsic evidence that clearly establishes that the missing descriptive matter is necessarily present in Ikeda to satisfy all the elements of independent claim 1 or 16. For example, Ikeda does not disclose --either explicitly or under the principles of inherency-- at least Applicants' claimed "plurality of metal halide films laminated along direction of c-axis of hexagonal crystal structure... [and having] about the same lattice constant" (independent claims 1 and 16).

Applicants point out that while Ikeda discloses that "The X-ray-to-charge converting film may be formed of amorphous Se, an alloy of Se and Te or As, amorphous Si, amorphous Te, PbI_2, or HgI_2. " (Ikeda , col. 12, lines 24-26), this does not establish that Ikeda's charge

converting film is "laminated along a direction of c-axis of hexagonal crystal structure... [and having] about the same lattice constant" according to Applicants' independent claims 1 and 16. Applicants note that a hexagonal structure does in fact have more than one plane on which crystal growth can occur.

In fact, the Examiner's own reference to *Callister*'s Table 3.2 on page 38 illustrates that a hexagonal structure has six different planes about the a-c axes, and two basal planes about the a-a axes in a given unit cell. Crystal growth could occur on any of these planes. As claimed in claims 1 and 16, Applicants claim a laminate along the c-axis of a hexagonal crystal structure. Perhaps the Examiner is confusing the concept of lamination of hexagonal structures with the close-packed basal planes of a hexagonal structure.

Thus, "[i]n relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art." M.P.E.P. § 2112(IV) (emphasis in original). In this case, as demonstrated by the reasoning presented above, the Examiner has not supported a determination that Ikeda's "layers of a hexagonal structure must be laminated within the c-axis because there are no other planes in which the layering could occur" (Office Action, p. 5).

Furthermore, acknowledging for the sake of argument, that "once a reference teaching a product appearing to be substantially identical is made the basis of a rejection, as the examiner presents evidence or reasoning tending to show inherency, the burden shifts to the applicant to show an unobvious difference." M.P.E.P. § 2112(V). Even though the Examiner has not presented adequate evidence or reasoning necessary to show inherency, and even though the burden has **not** been shifted, Applicants have established that the prior art charge converting film

does not necessarily or inherently possess the characteristics of the claimed laminated metal halide films. Ikeda's own disclosure, as well as the Examiner's citations to *Callister* and *Matweb*, fail to support her allegation that "the layers of a hexagonal structure must be laminated within the c-axis because there are no other planes in which the layering could occur" (Office Action, p. 5).

This clearly demonstrates that Ikeda does not inherently disclose features lacking in its explicit disclosure to adequately support a 35 U.S.C. § 102(e) rejection. Accordingly, the Examiner's rejection over Ikeda on the basis of inherency must fail.

Independent claims 1 and 16 are therefore allowable, and dependent claims 2-4, 6, 7, 9, 11-13, 15, 18, and 20 are also allowable at least by virtue of their respective dependence from allowable base claim 1 or 16. Therefore, the 35 U.S.C. § 102(e) rejection should be withdrawn.

Rejection of Claims 5, 8, 10, 14, 17, and 19 under 35 U.S.C. § 103(a):

Applicants request reconsideration and withdrawal of the rejection of claims 5, 8, 10, 14, 17, and 19 under 35 U.S.C. § 103(a) as being unpatentable over the Ikeda. Applicants respectfully disagree with the Examiner's arguments and conclusions. No *prima facie* case of obviousness has been established. Specifically, Ikeda does not teach or suggest every feature of Applicants' amended independent claims 1 and 16, from which claims 5, 8, 10, 14, 17, and 19 respectively depend.

> "To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on

applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)." M.P.E.P. § 2142, 8th Ed., Rev. 4 (October 2005), p. 2100-134.

Applicants have already demonstrated previously herein that Ikeda does not teach or suggest all the elements of independent claims 1 and 16.

Thus, even if Ikeda were modified according to the Examiner's allegation that "the lattice constant is an inherent property of the material used and is therefore dependent on the material chosen as the electrode" (Office Action, p. 10), for example, Ikeda still does not teach or suggest all elements recited in amended independent claims 1 and 16, and recited indirectly by dependent claims 5, 8, 10, 14, 17, and 19. Therefore, *prima facie* obviousness has not been established. Independent claims 1 and 16 are therefore allowable, for the reasons argued above, and dependent claims 5, 8, 10, 14, 17, and 19 are also allowable at least by virtue of their respective dependence from allowable base claim 1 or 16. Therefore, Applicants request that the improper 35 U.S.C. § 103(a) rejection be withdrawn.

Conclusion:

In view of the foregoing, Applicants request reconsideration of the application and withdrawal of the rejections. Because Applicants' amendments and arguments have removed all of the pending objections and rejections, claims 1-20 are in condition for allowance. Applicants request a favorable action.

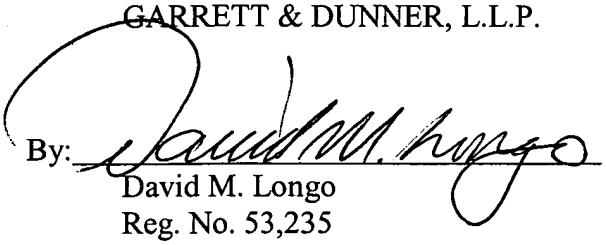
If there are any remaining issues or misunderstandings, Applicants request the Examiner telephone the undersigned representative to discuss them.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER, L.L.P.

Dated: May 22, 2006

By: 

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